SEQUENCE LISTING

<110> EBL GmbH

<120> Method for the production of protamine

<130> Protamin

<140>
<141>

<160> 36

<170> PatentIn Ver. 2.1

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Met Pro Arg Arg Arg Arg Ser Ser Ser Arg Pro Val Arg Arg Arg Arg
1 5 10 15

cgc ccc agg gtg tcc cga cgt cgt cgc agg aga gga ggc cgc agg agg 96
Arg Pro Arg Val Ser Arg Arg Arg Arg Arg Arg Gly Gly Arg Arg Arg
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cgt tag 102
Arg

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1 5 10 15

Arg Pro Arg Val Ser Arg Arg Arg Arg Arg Arg Gly Gly Arg Arg Arg
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Arg

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Met Pro Arg Arg Arg Arg Ser Ser Arg Pro Pro Val Arg Arg Arg Arg
1 5 10 15

cgc ccc agg gtg tcc cga cgt cgt cgc agg aga gga ggc cgc agg agg 96
Arg Pro Arg Val Ser Arg Arg Arg Arg Arg Arg Gly Gly Arg Arg Arg
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cgt tag 102
Arg

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Arg Pro Arg Val Ser Arg Arg Arg Arg Arg Arg Gly Gly Arg Arg Arg
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Arg

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atg ccc aga aga cgc aga tcc tcc aga cga cct gtc cgc agg cgc cgc 48
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1 5 10 15

cgc ccc agg gtg tcc cga cgt cgt cgc agg aga gga ggc cgc agg agg 96
Arg Pro Arg Val Ser Arg Arg Arg Arg Arg Arg Gly Gly Arg Arg Arg
20 25 30

cgt tag 102
Arg

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<213> Oncorhynchus mykiss
<223> aa sequence derived from ORF of nucleotide sequence

<400> 6
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1 5 10 15

Arg Pro Arg Val Ser Arg Arg Arg Arg Arg Arg Gly Gly Arg Arg Arg
20 25 30

Arg

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Met Pro Arg Arg Arg Arg Ser Ser Ser Arg Pro Val Arg Arg Arg Arg
1 5 10 15

cgc gcc agg gtg tcc cga cgt cgt cgc agg aga gga cgc cgc agg agg 96
Arg Ala Arg Val Ser Arg Arg Arg Arg Arg Arg Gly Arg Arg Arg Arg
20 25 30

cgt tag 102
Arg

<210> 8
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<213> Oncorhynchus mykiss
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<400> 8
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1 5 10 15

Arg Ala Arg Val Ser Arg Arg Arg Arg Arg Arg Gly Arg Arg Arg Arg
20 25 30

Arg

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Met Pro Arg Arg Arg Arg Ser Ser Ser Arg Pro Val Arg Arg Arg Arg
1 5 10 15

cgc ccc agg gtg tcc cga cgt cgt cgc agg aga gga cgc cgc agg agg 96
Arg Pro Arg Val Ser Arg Arg Arg Arg Arg Arg Gly Arg Arg Arg Arg
20 25 30

cgt tag 102
Arg

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<223> aa sequence derived from ORF of nucleotide sequence

<400> 10
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1 5 10 15

Arg Pro Arg Val Ser Arg Arg Arg Arg Arg Arg Gly Arg Arg Arg Arg
20 25 30

Arg

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1 5 10 15

cgc cct agg gtg tcc cga cgt cgt cgc agg aga gga ggc cgc agg agg 96
Arg Pro Arg Val Ser Arg Arg Arg Arg Arg Arg Gly Gly Arg Arg Arg
20 25 30

cgt tag 102
Arg

<210> 12
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<213> Oncorhynchus keta
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<400> 12
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1 5 10 15

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20 25 30

Arg

<210> 13
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Met Pro Arg Arg Arg Arg Ser Ser Ser Arg Pro Val Arg Arg Arg Arg
1 5 10 15

cgc gcn agg gtg tcc cga cgt cgt cgc agg aga gga ggc cgc agg agg 96
Arg Ala Arg Val Ser Arg Arg Arg Arg Arg Arg Gly Gly Arg Arg Arg
20 25 30

cgt tag 102
Arg

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<213> Oncorhynchus mykiss
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<400> 14
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1 5 10 15

Arg Ala Arg Val Ser Arg Arg Arg Arg Arg Arg Gly Gly Arg Arg Arg
20 25 30

Arg

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<222> (1)..(93)

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<400> 15
atg ccc aga aga cgc aga gcn agc cga cgn gtc cgc agg cgc cgc cgc 48
Met Pro Arg Arg Arg Arg Ala Ser Arg Arg Val Arg Arg Arg Arg Arg
1 5 10 15

ccc agg gtg tcc cga cgt cgc agg aga gga ggc cgc agg agg cgt tag 96
Pro Arg Val Ser Arg Arg Arg Arg Arg Gly Gly Arg Arg Arg Arg
20 25 30

<210> 16
<211> 31
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<213> Oncorhynchus mykiss
<223> nucleotide sequence derived from amino acid sequence

<400> 16
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1 5 10 15

Pro Arg Val Ser Arg Arg Arg Arg Arg Gly Gly Arg Arg Arg Arg
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<400> 17
atg ccc aga aga cgc aga gcn agc cga cgn ath cgc agg cgc cgc cgc 48

Met Pro Arg Arg Arg Arg Ala Ser Arg Arg Ile Arg Arg Arg Arg Arg
1 5 10 15

ccc agg gtg tcc cga cgt cgc agg aga gga ggc cgc agg agg cgt tag 96
Pro Arg Val Ser Arg Arg Arg Arg Arg Gly Gly Arg Arg Arg Arg
20 25 30

<210> 18
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<400> 18
Met Pro Arg Arg Arg Arg Ala Ser Arg Arg Ile Arg Arg Arg Arg Arg
1 5 10 15

Pro Arg Val Ser Arg Arg Arg Arg Arg Gly Gly Arg Arg Arg Arg
20 25 30

<210> 19
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atg ccc aga aga cgc aga aga tcc tcc agc cga cct ath cgc agg cgc 48
Met Pro Arg Arg Arg Arg Arg Ser Ser Ser Arg Pro Ile Arg Arg Arg
1 5 10 15

cgc cgc ccc agg gtg tcc cga cgt cgc agg aga gga ggc cgc agg agg 96
Arg Arg Pro Arg Val Ser Arg Arg Arg Arg Arg Gly Gly Arg Arg Arg
20 25 30

cgt tag 102
Arg

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<400> 20
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20 25 30

Arg

<210> 21
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Met Pro Arg Arg Arg Thr Arg Arg Ala Ser Arg Pro Val Arg Arg Arg
1 5 10 15

cgc ccc agg cgc gtg tcc cga cgt cgt cgc gca cgc cgc agg agg tag 96
Arg Pro Arg Arg Val Ser Arg Arg Arg Arg Ala Arg Arg Arg Arg
20 25 30

<210> 22
<211> 31
<212> PRT
<213> Clupea harengus

<223> nucleotide sequence derived from amino acid sequence

<400> 22
Met Pro Arg Arg Arg Thr Arg Arg Ala Ser Arg Pro Val Arg Arg Arg
1 5 10 15

Arg Pro Arg Arg Val Ser Arg Arg Arg Arg Ala Arg Arg Arg Arg
20 25 30

<210> 23
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<212> DNA
<213> Clupea harengus

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<400> 23
atg gcc aga aga cgc aga agc aga cgc gcn agc cga cct gtc cgc agg 48
Met Ala Arg Arg Arg Arg Ser Arg Arg Ala Ser Arg Pro Val Arg Arg
1 5 10 15

cgc cgc ccc agg cgc gtg tcc cga cgt cgt cgc gca cgc cgc agg agg 96
Arg Arg Pro Arg Arg Val Ser Arg Arg Arg Arg Ala Arg Arg Arg Arg
20 25 30

tag 99

<210> 24
<211> 32
<212> PRT
<213> Clupea harengus
<223> nucleotide sequence derived from amino acid sequence

<400> 24
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1 5 10 15

Arg Arg Pro Arg Arg Val Ser Arg Arg Arg Arg Ala Arg Arg Arg Arg
20 25 30

<210> 25
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<212> DNA
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<400> 25
atg gcc aga aga cgc aga tcc tcc agc cga cct ath cgc agg cgc cgc 48
Met Ala Arg Arg Arg Arg Ser Ser Ser Arg Pro Ile Arg Arg Arg Arg
1 5 10 15

ccc agg cgc cgg acc aca cgt cgt cgc agg gca ggc cgc agg agg cgt 96
Pro Arg Arg Arg Thr Thr Arg Arg Arg Arg Ala Gly Arg Arg Arg Arg
20 25 30

tag 99

<210> 26
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<400> 26
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1 5 10 15

Pro Arg Arg Arg Thr Thr Arg Arg Arg Arg Ala Gly Arg Arg Arg Arg
20 25 30

<210> 27
<211> 111

<212> DNA
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<400> 27
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aggcgcskgw ccmsacgtcg tcgcaggaga gsasgccgca ggaggcgtta g 111

<210> 28
<211> 102
<212> DNA
<213> Artificial Sequence

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tcccgacgtc gtcgccgncg nggaggccgc cgncgncgtt ag 102

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<211> 102
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: consensus 3

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tcgcgccgcc gccggcgccg cggcggccgc cggcgccgct ga 102

<210> 30
<211> 102
<212> DNA
<213> Artificial Sequence

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agccgccgcc gccgtcgccg cggcggacgc cgtcgccgtt ga 102

<210> 31
<211> 102
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: consensus 5

<400> 31
atgccgcggc gtcggcgcag ctccagccgt ccagtgcggc gccgtcgccg cccccgtgtc 60
tcgcgccgcc gccggcgccg cggcggacgc cgtcgccggt ga 102

<210> 32
<211> 102
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: ebl 1

<400> 32
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tcgcgccgcc gccggcgccg cggcggacgc cgtcgccgtt ga 102

<210> 33
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<212> PRT
<213> Artificial Sequence

<220>
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<220>
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<223> aa position 8: X= zero or R

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<223> aa position 9: X=zero or R or S

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<223> aa position 10: X= S or A

<220>
<223> aa position 11: X= S or R

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<223> aa position 12: X= R or P

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<223> aa position 13: X= P or R

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<223> aa position 14: X= V or I

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<223> aa position 19: X= zero or R

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<223> aa position 20: X= P or A

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<223> aa position 22: X= zero or R

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<223> aa position 24: X= S or T

<220>
<223> aa position 25: X= R or T

<220>
<223> aa position 29: X= zero or R

<220>
<223> aa position 30: X= zero or R

<220>
<223> aa position 31: X= G or A

<220>
<223> aa position 32: X= G or R

<220>
<223> aa position 36: X= zero or R

<220>
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<400> 33
Xaa Xaa Arg Arg Arg Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Arg Arg
1 5 10 15

Arg Arg Xaa Xaa Arg Xaa Xaa Xaa Xaa Arg Arg Arg Xaa Xaa Xaa Xaa
20 25 30

Arg Arg Arg Xaa
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<223> XbaI restriction site

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<223> Bam HI restriction site

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ctg ccg acc gct gct gct ggt ctg ctg ctc ctc gct gcc cag ccg gcg 102
Leu Pro Thr Ala Ala Ala Gly Leu Leu Leu Leu Ala Ala Gln Pro Ala
5 10 15 20

atg gcc atg ccg cgg cgt cgg cgt agc tcc agc cgt cca gtg cgt cgc 150
Met Ala Met Pro Arg Arg Arg Arg Ser Ser Ser Arg Pro Val Arg Arg
25 30 35

cgt cgc cgc ccc cgt gtc tcg cgc cgc cgc cgg cgc cgc ggc gga cgc 198
Arg Arg Arg Pro Arg Val Ser Arg Arg Arg Arg Arg Arg Gly Gly Arg
40 45 50

cgt cgc cgt tgaggaatta attcggatcc 227
Arg Arg Arg
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<223> Description of Artificial Sequence: cloning sequence for expression of Protamine

<400> 35
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1 5 10 15
Ala Gln Pro Ala Met Ala
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<213> Artificial Sequence
<223> Description of Artificial Sequence: cloning
sequence for expression of Protamine

<400> 36
Met Pro Arg Arg Arg Arg Ser Ser Ser Arg Pro Val Arg Arg Arg Arg
1 5 10 15
Arg Pro Arg Val Ser Arg Arg Arg Arg Arg Arg Gly Gly Arg Arg Arg
20 25 30
Arg